

WHAT IS CLAIMED IS:

1. A composition comprising an isolated immunogenic MHC polypeptide.

5 2. A composition of claim 1, wherein the immunogenic MHC polypeptide has a sequence from a hypervariable region of an MHC molecule.

10 3. The composition of claim 2, wherein the hypervariable region is in an MHC Class II molecule.

4. The composition of claim 3, wherein the hypervariable region is in an HLA Class II  $\beta$  chain.

15 5. The composition of claim 4, wherein the hypervariable region is in an HLA Class II  $\beta$  chain encoded by a DR4Dw4 allele.

20 6. The composition of claim 1, wherein the isolated immunogenic MHC polypeptide comprises amino acid residues 57-76 of the human HLA Class II DR4Dw4  $\beta$  chain.

25 7. The composition of claim 1, wherein the isolated immunogenic MHC polypeptide comprises an amino acid sequence Asp-Ala-Glu-Tyr-Trp-Asn-Ser-Gln-Lys-Asp-Leu-Leu-Glu-Gln-Lys-Arg-Ala-Ala-Val-Asp.

30 8. The composition of claim 1, wherein the isolated immunogenic MHC peptide has an acetylated N-terminus amino acid residue.

9. The composition of claim 1, wherein the immunogenic MHC polypeptide consists of between about 15 and about 20 residues.

35 10. The composition of claim 1, wherein the immunogenic MHC polypeptide has a sequence from an MHC molecule associated with an autoimmune disease.

11. The composition of claim 10, wherein the autoimmune disease is multiple sclerosis.

5 12. The composition of claim 10, wherein the autoimmune disease is rheumatoid arthritis.

10 13. The composition of claim 1, wherein the immunogenic MHC polypeptide has a sequence from an MHC molecule associated with an allergic response.

14. The composition of claim 13, wherein the allergic response is to ragweed.

15 15. A pharmaceutical composition comprising a pharmaceutically acceptable excipient, an adjuvant and an immunogenic MHC polypeptide.

20 16. The pharmaceutical composition of claim 15, wherein the immunogenic MHC polypeptide has a sequence from a hypervariable region of an MHC molecule.

25 17. The pharmaceutical composition of claim 16, wherein the hypervariable region is in an HLA Class II  $\beta$  chain.

18. The pharmaceutical composition of claim 17, wherein the hypervariable region is in an HLA Class II  $\beta$  chain encoded by a DR4Dw4 allele.

30 19. The pharmaceutical composition of claim 15, wherein the immunogenic MHC polypeptide comprises amino acid residues 57-76 of the human HLA Class II DR4Dw4  $\beta$  chain.

35 20. The pharmaceutical composition of claim 15, wherein the immunogenic MHC polypeptide comprises the amino acid sequence Asp-Ala-Glu-Tyr-Trp-Asn-Ser-Gln-Lys-Asp-Leu-Leu-Glu-Gln-Lys-Arg-Ala-Ala-Val-Asp.

21. The pharmaceutical composition of claim 15, wherein the isolated immunologic MHC peptide has an acetylated N-terminus amino acid residue.

5 22. The pharmaceutical composition of claim 15, wherein the immunogenic MHC polypeptide consists of between about 15 and about 20 residues.

10 23. The pharmaceutical composition of claim 15, wherein the adjuvant is alum.

15 24. A method of inhibiting a deleterious immune response in a patient, the method comprising administering to the patient an immunologically effective amount of a pharmaceutical composition comprising an adjuvant and an immunogenic MHC polypeptide.

20 25. The method of claim 24, wherein the deleterious immune response is an autoimmune disease.

26. The method of claim 25, wherein the autoimmune disease is multiple sclerosis.

25 {27. The method of claim 25, wherein the autoimmune disease is rheumatoid arthritis.

30 28. The method of claim 24, wherein the immunogenic MHC polypeptide has a sequence from a hypervariable region of an MHC molecule.

29. The method of claim 28, wherein the hypervariable region is in an HLA Class II molecule.

35 30. The method of claim 29, wherein the hypervariable region is in an HLA Class II  $\beta$  chain.

31. The method of claim 24, wherein the immunogenic MHC polypeptide comprises amino acid residues 57-76 of the human HLA Class II DR4Dw4  $\beta$  chain.

5 32. The method of claim 24, wherein the immunogenic MHC polypeptide comprises the amino acid sequence Asp-Ala-Glu-Tyr-Trp-Asn-Ser-Gln-Lys-Asp-Leu-Leu-Glu-Gln-Lys-Arg-Ala-Ala-Val-Asp.

10 33. The method of claim 24, wherein the immunogenic MHC polypeptide has an acetylated N-terminus amino acid residue.

15 34. The method of claim 24, wherein the deleterious immune response is an allergic response.

35. The method of claim 34, where in the allergic response is to ragweed.

20 36. The method of claim 24, wherein the administration is parenteral.

37. The method of claim 24, wherein the adjuvant is alum.

25 38. The method of claim 24, wherein the immunogenic MHC polypeptide is administered prophylactically.

30 39. A method of treating an autoimmune disease in a patient, the method comprising administering to the patient an immunologically effective amount of a pharmaceutical composition comprising an adjuvant and an immunogenic MHC polypeptide.

35 40. The method of claim 39, wherein the immunogenic MHC polypeptide has a sequence from a hypervariable region of an MHC Class II molecule.

41. The method of claim 40, wherein the hypervariable region is from an HLA Class II  $\beta$  chain.

5 42. The method of claim 41, wherein the hypervariable region is from an HLA Class II  $\beta$  chain encoded by a DR4Dw4 allele.

10 43. The method of claim 39, wherein the immunogenic MHC polypeptide comprises amino acid residues 57-76 of the human HLA Class II DR4Dw4  $\beta$  chain.

15 44. The method of claim 39, wherein the immunogenic polypeptide comprises the amino acid sequence Asp-Ala-Glu-Tyr-Trp-Asn-Ser-Gln-Lys-Asp-Leu-Leu-Glu-Gln-Lys-Arg-Ala-Ala-Val-Asp.

20 45. The method of claim 39, wherein the immunogenic polypeptide has an acetylated N-terminus amino acid residue.

25 46. The method of claim 39, wherein the patient has multiple sclerosis.

47. The method of claim 39, wherein the patient has rheumatoid arthritis.

25 48. The method of claim 39, wherein the immunogenic MHC polypeptide is administered prophylactically.

30 49. The method of claim 39, wherein the immunogenic MHC polypeptide consists of between about 15 and about 20 residues.

50. The method of claim 39, wherein the administration is parenteral.

35 51. The method of claim 39, wherein the adjuvant is alum.

52. A method of treating an allergic response in a patient, the method comprising administering to the patient an immunologically effective amount of a pharmaceutical composition comprising an adjuvant and an immunogenic MHC polypeptide.

53. The method of claim 52, wherein the immunogenic MHC polypeptide has a sequence from a hypervariable region of an MHC Class II molecule.

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54. The method of claim 53, wherein the hypervariable region is from an HLA Class II  $\beta$  chain.

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55. The method of claim 52, wherein the allergic response is to ragweed.

56. The method of claim 52, wherein the immunogenic MHC polypeptide consists of between about 15 and about 20 residues.

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57. The method of claim 52, wherein the immunogenic MHC polypeptide is administered prophylactically.